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# The effect of different rest periods on the Dynamic Vessel Analysis

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Footnotes

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## Abstract

**Purpose** : Retinal vessels dilate when stimulated with flickering light. This phenomenon is described as functional hyperemia and closely associated with neurovascular coupling. Flicker light stimulation and investigation of the induced retinal vasodilation, known as dynamic vessel analysis (DVA), is an established noninvasive means of assessing the endothelial function. In studies conducting repetitive tests, different rest periods between 5 and 30 minutes to allow sufficient recovery of vessel function are used. However, the influence of various rest periods on the recovery is still unclear. This work aims to clarify whether the DVA is affected by different retesting periods.

**Methods** : The relative vaso-dilation values of 16 volunteers (10m, 6f, 26.1±6.0 years, one eye) were measured using the Retinal Vessel Analyzer (Imedos Systems UG, standard protocol: duration of 350 seconds). Exclusion criteria were visual acuity less than 0.5, astigmatism >2.0 D, myopia > 5.0 D and ocular and systemic diseases. We investigated four primary vessel segments (superior as well as inferior temporal artery (STa/ITa) and vein (STv/ITv)) located between 0.5 and 2.0 disc diameters from the optic disc. For each volunteer the DVA was performed in four pairs (reference and repetitive test) with different rest periods of 5, 10, 15 and 30 minutes in a randomized order. Between the end of a pair and the start of the following pair a long-term resting of 35 minutes was applied. For statistical analysis the t-test and the Wilcoxon test for paired samples were used. .

**Results** : For all rest periods vaso-dilation values between reference and repetitive tests showed no significant differences (5/10/15/30 minutes STa: p=0.478/0.470/0.314/0.054, ITa: p=0.875/0.255/0.349/0.646, STv: p=0.706/0.776/0.320/0.609, ITv: p=0.727/0.932/0.272/0.173).

**Conclusions** : The presented work revealed, that different rest periods have no effect on the vaso-dilation of retinal veins and arteries. This means, in studies conducting repetitive tests, the DVA would not be concerned by the rest period ≥ 5 minutes

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